

# Exercises

- 1) Import the csv module and use the reader function to read data from a CSV file.
- 2) Import the gzip module and use the compress function to compress a string.
- 3) Import the zipfile module and use the ZipFile class to create a zip file containing multiple files.
- 4) Import the sys module and use the argv variable to get command line arguments.
- 5) Import the itertools module and use the product function to get the cartesian product of two lists.
- 6) Import the collections module and use the Counter class to count the frequency of items in a list.
- 7) Import the heapq module and use the heapify function to create a heap from a list.
- 8) Import the bisect module and use the bisect\_left function to find the insertion point for an item in a sorted list.
- 9) Import the math module and use the ceil function to round up a number to the nearest integer.
- 10) Import the random module and use the shuffle function to randomly shuffle the items in a list.

# Exercises and solution

1) Using the csv module and the reader() function:

```
import csv

# Read data from a CSV file
with open('data.csv', 'r') as file:
    reader = csv.reader(file)
    for row in reader:
        print(row) # Output: each row of the CSV file as a list
```

2) Using the gzip module and the compress() function:

```
import gzip

# Compress a string
data = b'hello world'
compressed_data = gzip.compress(data)

print(compressed_data) # Output: compressed data
```

3) Using the zipfile module and the ZipFile() class:

```
import zipfile

# Create a zip file containing multiple files
with zipfile.ZipFile('example.zip', 'w') as zip:
    zip.write('file1.txt')
    zip.write('file2.txt')
    zip.write('file3.txt')

print("Zip file created") # Output: Zip file created
```

4) Using the sys module and the argv variable:

```
import sys

# Get command line arguments
arguments = sys.argv

print(arguments) # Output: list of command line arguments
```

5) Using the itertools module and the product() function:

```
import itertools

# Get the cartesian product of two lists
list1 = [1, 2, 3]
list2 = ['a', 'b', 'c']
product = list(itertools.product(list1, list2))

print(product) # Output: cartesian product of the two lists
```

6) Using the collections module and the Counter() class:

```
import collections

# Count the frequency of items in a list
my_list = ['apple', 'banana', 'apple', 'orange', 'banana', 'apple']
counter = collections.Counter(my_list)

print(counter) # Output: frequency of items in the list
```

7) Using the heapq module and the heapify() function:

```
import heapq

# Create a heap from a list
my_list = [4, 1, 3, 2, 5]
heapq.heapify(my_list)

print(my_list) # Output: heap created from the list
```

8) Using the bisect module and the bisect\_left() function:

```
import bisect

# Find the insertion point for an item in a sorted list
my_list = [1, 3, 5, 7, 9]
insertion_point = bisect.bisect_left(my_list, 6)

print(insertion_point) # Output: index where 6 should be inserted
to maintain sorted order
```

9) Using the math module and the ceil() function:

```
import math

# Round up a number to the nearest integer
number = 4.3
rounded_number = math.ceil(number)

print(rounded_number) # Output: 5
```

10) Using the random module and the shuffle() function:

```
import random
```

```
# Randomly shuffle the items in a list
```

```
my_list = [1, 2, 3, 4, 5]
```

```
random.shuffle(my_list)
```

```
print(my_list) # Output: shuffled list
```